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REVIEW OF NEW SOVIET MONOGRAPH ON ELECTROMAGNETIC WAVES

Radio  
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[The following is a review, taken from Radio, of V. M. Lopukhin's monograph "Excitation of Electromagnetic Oscillations and Waves by Electron Streams (Vozbuzhdeniye elektromagnitnykh kolebaniy i voln elektronnykh potokami), State Publishing House of Technical-Theoretical Literature (GITTL), 1953, 324 pages, 10.50, rubles, 7,000 copies.]

The monograph on electromagnetic waves discusses methods for excitation and amplification of centimeter waves with the aid of traveling-wave and cathode-ray tubes. In traveling-wave tubes, an interaction is achieved between the electron stream and a traveling electromagnetic wave which has a longitudinal electric field component. As a result, the kinetic energy of the electrons is transferred to the electromagnetic waves, whereupon the average velocity of the electron stream decreases. In the electron-wave tube, several parallel electron streams of different average velocities interact. Problems of calculating this type of interaction of electron streams with high-frequency electromagnetic fields are important because they are the basis of the theory of modern centimeter-wave oscillators and amplifiers.

The monograph discusses many works of Soviet scientists in the field of radio physics and superhigh-frequency electronics, which preserve Soviet priority in this new and currently very important field of radio engineering.

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